

Shamanism and the Evolutionary Origins of Spirituality and Healing

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Abstract

Although the term “shamanic” is used to refer to a diverse range of phenomena, it nonetheless reflects something empirical. Cross-cultural research illustrates that the concept of the shaman reflects the existence of similar spiritual healing practices found in pre-modern foraging and simple horticultural and pastoral societies around the world (Winkelman, 1992; 2000). This cross-cultural concept of the shaman was initially proposed by the renowned scholar of comparative religion, Mircea Eliade (1964). However, his various characterizations of shamans were in part responsible for subsequent confusion regarding their exact nature and function. While offering very general characterizations of the shaman as someone who entered a state of “ecstasy” to interact with “spirits” on behalf of the community, Eliade also cited many additional specific concepts of the shaman which some subsequent researchers neglected in their applications of this term. This paper presents the findings of cross-cultural and cross-species research that provides a basis for describing shamanism, its relationships to human nature, and its deep evolutionary origins. Shamanism has its bases in innate aspects of human cognition, engaging the use of altered states of consciousness to integrate information across several levels of the brain to produce visual symbolism exemplified in visionary experiences. The deeper evolutionary roots of shamanism are found in the capacities for ritual, which provide the most important communication and integrative processes in lower animal species. The evolution of shamanism can be deduced from these bases and the similarities of shamanic practices to the rituals of chimpanzees. Drumming, group vocalization, and other displays were the foundations from which the uniquely human mimetic capacity evolved and provided a basis for shamanism.

Key Words: shamanism, spirituality, healing

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The Concept of the Shaman

In proposing an etic (cross-culturally valid) conceptualization of the shaman, Eliade (1964) pointed to phenomena found in cultures around the world. In small scale societies, there was a central spiritual practitioner whose activities were of

unparalleled importance in the lives of the members of the community. While ordinarily a man, women too might have held these informal roles, serving as the most significant spiritual leader of small scale societies.

The shamanic ritual was of unparalleled importance in the lives of the community, constituting an important collective event. In what was typically a nocturnal activity, the shaman united the entire community in a process that typically lasted throughout the night. Dancing around the group while drumming, rattling, and chanting, the shaman exhorted the spirits to come to the assistance of the members of the community. Recounting myths and

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sometimes using verbiage understood by few, the shaman sang, conversed with animals, and chanted to engage the spirits. Shamanic rituals would exhort evil spirits to cease their afflictions or ask benevolent spirits for assistance in locating game, healing the ill or assuring protection for the group.

A key aspect of the shaman's professional activities was the ability to enter what Eliade referred to as ecstasy, an altered state of consciousness (ASC). These shamanic ASCs were produced by many different techniques, but key to the induction were the effects of drumming, singing, chanting, and dancing. Other procedures for inducing ASCs included fasting, practicing austerities, dream incubation, and the ingestion of psychoactive substances. These preparations, combined with hours of dancing, drumming, and chanting, induced profound ASCs in the shaman and often the community members as well. These ASCs enabled the shaman to contact the spirit world, acquire supernatural powers, and provide a variety of services for the community. These ASCs enabled the shaman to diagnose the causes of disease, to heal, to locate friends, enemies, and animals, and to prophesize events of importance to the group.

A central feature of the shaman's ASCs—referred to by terms such as “soul journey,” “magical flight,” and “spirit incorporation,” involved experiences in which the shaman was thought to travel into the spirit world. This ability was part of the shamanic initiation and development process, often involving a “vision quest” during which illness, spontaneous alterations of consciousness, or a variety of deliberate activities produced an encounter with one or more “spirit ally.” This spirit entity, often manifested in an animal form, played a key role in the manifestation of the shaman's powers. The shaman used these spirits to heal, recover the lost souls of patients, or guide the souls of the deceased into the after-life. From a contemporary psychological perspective, these spirits can be conceptualized as alter-egos or identities that shamans could assume, providing them with numerous powers and abilities (see Winkelman, 2000).

Shamanism in Cross-Cultural Perspective

The characterizations of shamanism provided by Eliade have been confirmed through empirical cross-cultural studies based upon world-wide samples and formal quantitative analysis (Winkelman, 1992). These findings establish that shamanism is a cross-cultural phenomenon, reflecting a specific complex of characteristics that has been found worldwide in hunter-gatherer and simple pastoral and agricultural societies. The characteristics of these “core” or classic shamans revealed by Winkelman's research include:

- a charismatic group leader who is generally a male, with females restricted to non-reproductive periods;
- communal ritual activities involving chanting, music, drumming, and dancing;
- professional training involving a vision quest interaction with the spirit world;
- induction of an altered state of consciousness during both training and practice;
- a specific shamanic ASC experience known as the soul journey or soul flight;
- an initiatory death-and-rebirth experience;
- a primary source of power involving control of animal spirits;
- an ability to transform into animals;
- activities involving assistance in hunting;
- professional abilities of healing, diagnosis, and divination;
- theories of illness involving soul loss, magical intrusion of objects, and attacks by spirits and sorcerers; and
- an ability to do harm through sorcery.

Why should such a specific complex of characteristics be found worldwide in these societies? This essay proposes an answer to this question in illustrating the neurobiological and evolutionary foundations of these universal aspects of shamanism and its ritual practices. The strikingly similar ritual practices of hunter-gatherer societies around the world reflect biogenetic foundations that provide the framework for a shamanic paradigm, an etic framework that illustrates the foundation of humanity's original spiritual practices

(Winkelman, 2000; 2002a; 2002b; Winkelman and Baker, 2008). The neurobiological bases of shamanic “ritual” and practices are conceptualized as procedures that enhance individual or community survival by enhancing the ability to integrate information relevant to survival needs, social bonding, and the management of health, particularly stress.

Shamanism derived from the ancient phylogenetic roots of ritual as a mechanism for communication and social coordination. The deeper evolutionary origins of the shamanic paradigm are derived from ancient hominin ritual capacities illustrated in the homologies of shamanic ritual with the maximal displays of chimpanzees. Some of the homologies between chimpanzee displays and shamanic practices include: night-time community rituals involving drumming, emotional vocalizations, and upright displays/dancing.

The similarities in animal ritualizations and shamanic practices worldwide reflect biological bases derived from (Winkelman, 2000; 2002b; Winkelman and Baker, 2008):

- 1) community bonding rituals that involve emotional vocalizations and drumming as social signaling and communication processes;
- 2) ASCs that involve the elicitation of an integrative mode of consciousness;
- 3) manipulation of innate representational modules to enhance self-awareness and social identity formation in the concepts of souls and spirits; and
- 4) healing capacities based on the above processes, including ritual effects in eliciting bodily opioid responses and ASCs that provide physiological relaxation and integration.

The neurobiological foundations of shamanic rituals are revealed by examining the biological and evolutionary roots for community interactions and the physiological aspects of ASCs. The conservative aspects of biological evolution are found in the shamanic preservation of the functions of earlier adaptive structures found in ritual activities of other animals. These implicate ancient areas of the brain, referred to by MacLean (1990) as the R-

complex (in reference to the reptilian brain and its ritual behaviors) and the paleomammalian brain (which is involved in attachment processes and community bonding. Uniquely human foundations of shamanism are also found in other brain systems, particularly innate modules for representation of animals, others, and self. Shamanism employed these innate systems for new adaptive functions, combining their capacities in metaphoric thought to create new cognitive styles and symbolic healing processes. These are manifested in the roles of animal spirit concepts in the formation of personal and social identities and the information processing and integration provided in the visionary images of shamanic ASCs. These provided mechanisms for personal individuation, social integration, and cognitive and emotional integration by integrating different innate cognitive-affective modules or processors. These integrative outputs are exemplified in shamans’ visionary experiences, complex models incorporating the integrative information capacities of dream and imaginative cognitive processes. These integrative potentials are also manifested in other shamanic phenomena such as spirits and animal allies. Specialized innate modules for processing information relevant to self-concept, social others, and the animal world were integrated in shamanic practices to produce metaphoric thought represented in shamanic universals of soul flight, animal allies, spirits, and death-and-rebirth experiences (Winkelman, 2000; 2002a; 2002b).

Biogenetic Structural Foundations of Shamanism in Animal Ritual

The ancient biological bases of shamanic rituals and their adaptive functions are illustrated by understandings of the nature of animal ritual, as provided in such works as *The Spectrum of Ritual* (d’Aquili *et al.*, 1979) and *Supernatural as Natural: A Biocultural Theory of Religion* (Winkelman and Baker, 2008). An evolutionary biological approach to ritual illustrates that shamanic rituals have ancient roots and were built out of prior adaptations revealed in the homologous behaviors humans share with other species.

Ritual is integral to vertebrate social life, providing mechanisms for communication that are basic to social coordination in the animal world (d'Aquili *et al.*, 1979). Animal rituals use behaviors, manifested in actions, which signal a disposition for social behaviors. Animals' rituals have communication and social signaling functions, using genetically based behaviors to provide information that facilitates interactions among members of a species, coordinating their behaviors in ways that contribute to cooperation. By making internal dispositions publicly available, animal rituals contribute to cooperative behaviors by providing information that helps produce socially coordinated responses.

Drumming as a Signaling Mechanism

Drumming and other forms of percussion are a universal aspect of shamanism that has deep evolutionary roots as an intraspecies and interspecies signaling mechanism manifesting vigilance, fitness, and a readiness to act. Many animals "drum"—using their body to produce seismic vibrations that communicate many messages to their own species and others: "Drumming also functions in interspecies communication when prey animals drum to communicate to predators that they are too alert for a successful ambush" (Randall, 2001; p.1). Drumming conveys information about predators to nearby kin, displaying fitness in a way that both prepares for and reduces the need for action. Rodent footdrumming is a ritualization of intention movements (e.g., running), displaying a readiness to act, a signaling mechanism that indicates to predators one's fitness and the readiness to flee.

Chimpanzees protect their territory against other groups through group shouting, pant hooting vocalizations (i.e., a loud call) and aggressive displays with fast and loud "drumming" produced by jumping up and down on tree buttresses, typically by males (De Waal, 1997). Drumming provides a system of long distance communication often performed during travel, allowing dispersed members of groups to remain in contact with one another and provide support in confrontations with chimpanzees from other

communities (Arcadi *et al.*, 1998). Arcadi *et al.* found that interbeat intervals of chimpanzee drumming have modal beats at about .2/second and average .3 seconds, producing approximately 3 to 5 beats per second, a frequency that is within the range of typical shamanic drum beating and the theta brain waves characteristic of ASCs (see below).

Group Chanting as Ritual Communication

Ritualized synchronous group singing, as found in chimpanzee and other primates, provides an emotional communication system that promotes social well-being (Hauser, 2000; Marler, 2000; Merker, 2000). Universal aspects of shamanic ritual involve chanting, which engages an ancient audio-vocal communication system that predated speech (Oubre, 1997), and serves as an expressive system for communicating emotional states, motivating other members of the species, and managing social contact, interpersonal spacing, and mate attraction (Geissmann, 2000). While chanting reflects a uniquely human capacity associated with music, such vocalization capacities have their origins in primate call and vocalization systems (Wallin *et al.*, 2000; Molino, 2000). These vocal expressive modalities provide communication mechanisms that enhance group cohesion and cooperation (Brown, 2000; Freeman, 2000; Merker, 2000).

The human expressive capability of music has deep evolutionary roots that provided important adaptations in communicating personal information to members of the group. Human musical capacities, however, are the outcome of hominan evolution that produced unique human skills that have origins that go back to the foundation of the Homo lineage. Musical capacities have a central role in enhancing human functioning at a number of levels, particularly social, and in providing healing mechanisms. Music, through the effects of tone and sound on emotions, has salubrious effects on health. Crowe (2004) notes that throughout history, music has been understood to promote health and wellness and enhance balance and emotional harmony. Music also exerts a number of influences that produce synchronization -

from the physical vibratory effects on the body, through synchronization of brain waves, coordination of emotions, and a common focus of intention in inducing a sense of unity and connectedness. A general health effect of music involves this entrainment in the brain, discussed below in the general model of ASCs and the integrative mode of consciousness. This mode involves the production of synchronized theta wave brain discharges that synchronize the levels of the brain and establish resonant patterns across the body through sound vibrations.

Music has direct impacts on the brain, inducing a variety of patterns and responses. Crowe reviewed a number of other mechanisms through which music may also induce physiological effects that result in relaxation and stress reduction. Physiological reactions produced by music include its impact on the autonomic nervous system and the emotional processing centers. Music has an ability to heal through the elicitation of positive emotions as well as providing supportive cathartic expression that relieves troubled emotions. Crowe characterized music's effects on emotions to be the consequence of biologically-determined neural responses, its direct impact on nonverbal communication processes, and its ability to both communicate and elicit experiences in others. Crowe reviewed a range of research that indicates emotional expression induced by music is based in the elicitation of innate biologically-determined emotional states. Music has a capacity for healing through eliciting those emotional states and providing a mechanism for venting and constructive expression of repressed emotions, generating insight into one's own feelings. These properties of music to function as a form of communication go beyond the nonverbal expression of basic emotions, enabling people to express more highly developed affective forms.

Dancing as Ritual Communication

Precursors of shamanic ritual are manifested in behaviors of both wild and captive chimpanzees. Kohler (1927; p.314-15) observed captive chimps engaging in "primitive dancing," which included foot

stomping and revolving around in a circle like a "spinning top" and group rhythmic marches around a post. Lawick-Goodall (1968; 1971; p.52-54) observed a "rain dance" in the behavior of wild chimpanzees in responses to an approaching thunderstorm. Following a loud thunder burst, the alpha male began to stagger rhythmically, swaying from foot to foot and producing pant-hoots. Then the alpha male, followed by other males, ran up and down a hill, breaking branches from the trees, as the females and young animals watched the display. These unusual displays involve a typical pattern of aggressive activity performed by dominant individuals. A mild threat is conveyed when an individual slightly raises its head or arm, or gestures as if preparing to throw something, often with the hair bristling and erect. This may escalate to a bipedal posture that make the animal appear larger, and may be expanded by swaying from foot to foot or running towards an opponent on two legs (often while waving the arms). Chimps also shake the branches of nearby trees, throw rocks and other objects, and flail with sticks or branches. Extended features of the display such as leaping, hurling rocks and branches, and beating on the ground can escalate to more intimidating charging display—stamping the feet, slapping hands against the ground, throwing rocks and sticks, combined with upright running. The most dramatic and serious type of aggressive or dominant behavior is the charging display, during which a chimp (usually a male), may shake, drag, or flail branches, throw objects, slap the ground with its hands and stomp with its feet, leap and swing through trees, vocalize, and even drum on tree trunks or buttresses of trees with the feet. This display may be quadrupedal, but in its maximal form involves a vigorous bipedal charge that enables them to beat with their arms, grasp branches, waving them from side to side and beating them on the ground.

The Evolutionary Origins of Shamanic Ritual

The homologies of shamanic ritual with chimpanzee chanting, "rain dances," drumming behaviors, and maximal displays indicate that they are genetically-based behaviors of the hominoid lineages,

behaviors that had important social functions before the split between chimpanzee and human lines. In essence, the chimpanzee model indicates that humans have genetic disposition to collective ritual behaviors in which males in particular engage in collective dancing and charging displays against an unknown other. The universality of drumming in shamanism reflects a widespread mammalian signaling mechanism that was further developed in hominoids. Drumming has adaptive effects in warding off animal threats, producing fear reactions in many animals. Drumming is a signaling device that produces loud sensations analogous to those produced by large, powerful beasts. This communication of an alert and vigilant state may generalize to communicate a threat, an ability to act with striking as in the case of chimpanzees beating branches, a basic defensive mechanism seen in their rituals and their responses to predatory felines. Chimpanzees' aggressive displays (charging around, banging branches, and slapping the ground) are taken as evidence of the fitness, health, and vigor of the animal, involving striking behaviors that were expanded in human evolution. The chimpanzees' charging of the thunderstorm involves taking an aggressive stance towards an ominous threatening but unknown agent that has a homology with the shamans' dramatic ritual aggressive attacks against the unseen spirits. Ritual aggression also produces a unified social response to outside threats and predators, engaging both intraorganismic and interorganismic coordination necessary for concerted group action.

Shamanic ritual (e.g., group activities, vocalizations such as singing and chanting, ritual dancing, imitation of desired goals) has biological origins in the same structures and functions underlying animal rituals, which function as systems of group coordination and communication. These enactment and communicative functions involve the "reptilian" brain (R-complex) and paleomammalian brain (limbic brain), which provide enactive and vocal emotive expressive systems (MacLean, 1990). Humans' rituals elaborated on these communicative and integrative functions, first using mimesis as a system to expand expression of intentions.

Problem: McClenon siger at ritualet ligger bag ACC – men taler han også om reptilhjernen. Hvad er baggrunden for meditation?

Mimesis as Ritual Communication

Shamanism exploited this group orientation with a deliberate expansion of ritual communication through mimesis, the deliberate communication through imitation. Basic to shamanic activity is mime and dancing, as well as ritual enactments of struggles with the spirits combined with chanting, singing, and imitative vocalization. These imitative enactments characteristic of shamanic practices engage the mimetic modules, uniquely human capacities that provide an ability to symbolize by means of activity (Donald, 1991; Molino, 2000). Mimesis involves a conscious behavioral production of metaphor through mime, imitation and gesture that involves enactment, mapping actions onto perceptions of events. Mimesis provides the ability to entrain the body to external rhythms, and is a uniquely human communicative capacity that emerged as a pre-linguistic expressive system in early hominids (Donald, 1991). These bodily movements, gestures, and facial expressions are an early form of symbolic communication as exemplified in expressive modalities found in the rhythm, affective semantics, and melody that are typical of shamanic rituals (Donald, 1991). Rhythmic modules of the brain underlie this expressive system that coevolved to enhance social bonding and communication of internal states, an affective semantics. These "rhythmic-affective semantics" express fundamental emotions (Molino, 2000) and emerged early in hominid evolution for producing group coordination.

Donald contended that group ritual dances and vocal imitation of animals were among the first of human mimetic activities. This mimetic capacity produced a shared culture that exceeded the capacity of hominid cultures, providing the basis for shared information through enactive symbolism. This enactive behavior expressed emotions and a mythic ethos in a behavioral expressive system that provided the basis for the first shared culture of humans and

provided mechanisms for cultural expression and group integration. Mimesis has a whole-body expressive and mapping capacity that illustrates its domain-general properties that links many different systems. Donald (2001) proposed that this mimetic capability emerged from the capacity to focus attention on one's own body movements, producing a form of body-based awareness.

This increased awareness of self-in-environment enhanced imitative cultural expression in customs, rituals, gestures, and skill behaviors. These mimetic traditions provide a collective expressive system that produced a shared group consciousness and culture, engaged distributed cognitive processes, and provided a basis for metaphoric thinking.

Sociophysiological Dynamics of Community Relations

A central aspect of shamanism involves the community; this community engagement by shamanic ritual has important social, psychological, and psychophysiological effects. These effects reflect humans' biological need for group coordination that derived from an expansion of attachment bonds that evolved to maintain proximity between infants and caregivers, providing a secure basis for the self by assuring feelings of protection by a powerful figure (Kirkpatrick, 2005). Humans' evolutionary ancestry produced a neuropsychology for a social world, a need for emotional life that is wired into the human nervous system. These mammalian capacities were enhanced in humans and extended to broader groups. Social identity and personhood became a necessity, a reflection of social interdependency that produced a canalization and coordination of individual neurological, emotional, and psychological development in relations to social others.

Shamanic ritual practices met humans' attachment needs, while using group ritual helped to fulfill fundamental human needs for belonging, comfort, and attachment to others. Rituals integrate people, enhancing social support systems and group identity, and facilitating healing. Rituals also produce physiological reactions that enable shamanic practices to have biological consequences, a function of ritual

that has deep phylogenetic roots. Therapeutic psychosocial effects are also derived from group ceremonies that integrate the social group and enhance group identity.

Social Bonding and the Opioid Mediated Attachment Processes

Frecska and Kulcsar (1989) illustrated how communal rituals such as shamanism elicit attachment bonds and related physiological mechanisms that release endogenous opiates (opioids), producing psychobiological synchrony within the group (Frecska and Kulcsar, 1989, pp. 76, 71). Communal rituals elicit attachment-based opioid release, reinforcing the psychosocial influences of ritual, and enhancing community cohesion and psychobiological synchrony in the group. Opioid release stimulates the immune system, producing a sense of euphoria, certainty and belongingness, enhancing coping skills and maintenance of bodily homeostasis, and enhancing stress tolerance and environmental adaptation (see Winkelman, 1997; 2000 for review). Ritual is a form of socialization that links emotionally charged cultural symbols with associated physiological responses, producing a cross-conditioning of the endocrine and immune systems with the mythological, somatic, and psychological spheres (Frecska and Kulcsar, 1989). Shamanic rituals manipulate the symbols associated with social bonding processes to activate the opioid system. Shamanic rituals also stimulate release of opioids through a variety of physical and behavioral mechanisms (Winkelman, 1997), including: extensive drumming, dancing and clapping activities; repetitive physical activity; temperature extremes (e.g., sweat lodges); stressors such as fasting, flagellation, and self-inflicted wounds; emotional manipulations (e.g., fear, positive expectations); and nighttime activities when endogenous opioids are naturally highest (see Winkelman, 2000).

Hayden (2003) analyzed the evolution of shamanism as a function of innate emotional foundations and adaptations to ecological circumstances. Hayden suggested that linkages among resource stress, community relations, and

intercommunity alliances enabled shamanism and its ASCs to contribute to human survival. Severe droughts several million years ago exerted important selective influences on hominid populations that gave rise to modern humans' shamanic practices. Among the changes were abilities to forge close emotional bonds that helped survival in inhospitable environments. Emotional bonds with other groups provided resources to cope with crises through assurance of assistance for food and physical protection. Human emotional bonding produced secure alliances across time that helped assure survival in the face of disaster. The adaptiveness of ritual and susceptibility to religious indoctrination lies in the creation of a sense of a common group bond and identity that helped to overcome the natural tendency to ethnocentrism and xenophobia that maintain in-group boundaries and exclude others. Shamanic rituals helped forge a sense of commonality, widely manifested in the sense of unity and pan-human identity associated with ASC experiences

Shamanic ASC and the Integrative Mode of Consciousness

Eliade (1964) used the term "ecstasy" to refer to shamanic ASC; other investigators have taken a broader view of shamanistic ASCs that involved other parameters such as the "incorporation" of spirits (Peters and Price-Williams, 1981). Whatever their nature, the near-universality of institutionalized ASCs (Winkelman, 1992; 2000) reflects their inherent basis in human biology and the fundamental similarity of the brain conditions produced by a variety of activities and agents (Mandell, 1980; Winkelman, 1997; 2000). The natural basis of this condition is reflected in the wide variety of natural agents and ritual procedures (e.g., trauma, long distance running, near starvation, drumming, chanting, music, dancing, sensory deprivation, nutritional imbalances, extreme fatigue, and use of psychotropic plant substances) that elicit a common pattern of brain response.

Winkelman (2000) discusses the diversity of the ASCs and their underlying biological commonalities as different manifestations of an integrative mode of consciousness that is a basic feature of the

human nervous system. These ASCs in general can be induced by a wide variety of agents and procedures, including stress, starvation, shock, drugs, and ritual procedures, because they all activate a general biological response that leads to a conscious parasympathetic dominant mode. Shamanic ASCs typically begin with dietary and sexual restrictions, followed by an all-night ceremony involving enactment, drumming, chanting, and dancing until collapse (or deliberate repose). The overall physiological effects of these activities activate the sympathetic division of the autonomic nervous system until exhaustion leads to collapse and a parasympathetic dominant phase, a "relaxation response" (Benson, 2000) that may also be entered directly through meditation, withdrawal, or an internal focus of attention.

The ASCs of shamans and various shamanistic (i.e., shaman-like) healers elicit natural human response involved in the "integrative mode of consciousness" because it evokes a variety of endogenous psychointegrative and therapeutic processes. ASCs involve systematic brain discharge patterns that propagate across the neuraxis of the brain, producing brain wave synchronization in the alpha and theta wave range (Mandell, 1980) that also synchronize the levels of the brain and the frontal hemispheres. The underlying basis of these synchronization responses is the evocation of discharges in the serotonergic connections between the limbic system and brain stem regions that produce synchronous discharges that propagate across the neuraxis into the frontal cortex (Mandell, 1980). The synchronous patterns originating in the hippocampal-septal-reticular raphe circuits are manifested in high voltage slow wave EEG activity (especially theta waves, 3-6 cycles per second). These discharges reflect linkages of the attentional mechanisms in the behavioral brain regions (reticular formation) and the emotional brain (limbic brain, particularly the hippocampal-septal area), producing ascending discharge patterns that synchronize these levels of the brain while projecting discharges into the two frontal lobes.

ASCs produce a focus on information from evolutionarily earlier structures of the

brain, “animal-like” cognitive processes that facilitate environmental adaptation, hunting and food procurement and protection (see MacLean’s [1990] discussion of paleomentation processes). Shamanic ASCs produce psychophysiological and psychosocial integration by enhancing interactions between conscious and unconscious processes, linking the pre-verbal structures of consciousness (related to the R-complex and paleomammalian brain) with the functions of the frontal lobes of the brain through the ascending impulses manifested in vision and feelings.

ASCs as Dream Exaptations for Scenario Building

A key aspect of shamanic ASCs involves their interaction with dreaming. The overnight activities of shamanic rituals necessarily engage the dream processes, an outcome enhanced by practices of dream incubation. Nighttime dreaming, at least as indicated by rapid eye movement (REM) activity, is found throughout most mammalian species, constituting an adaptation for learning by producing memory associations during sleep (Winson, 1985). The near-universality of REM sleep in mammals indicates it is a pre-adaptation for human consciousness (Brereton, 2000). Shamanic visionary experiences engage a self-representation capacity based in the same systems that underlie dream experiences (Hunt, 1995). Brereton (2000) analyzed adaptive aspects of dreaming involved in shamanism as involving a representation of self, a process of scenario construction that provides processes for risk-free construction and examination of options. Dream research suggests that a “replaying” of previous scenarios, emotionally marked memories that have not been effectively resolved and incorporated into behavior patterns (Winson, 1985). The non-verbal bodily-based aspects of dreaming indicate its ability to connect the body image at a pre-egoic and prelinguistic level, engaging levels of symbolization that preceded egoic consciousness. The shamanic ASC also produces forms of self awareness that transcend the embeddedness of the biologically based body image.

The Shamanic “Soul Journey”

The key aspect of many shamanic ASCs is referred to as a “magical flight” or “soul journey;” which is similar to contemporary reports of “out-of-body experiences,” “astral projection,” and other reports of traveling to a spirit world (Winkelman, 1992; 2000). The near-universality and continued spontaneous manifestations of this separation of self from body in “near-death experiences,” many contemporary spiritual practices, and near-death experiences indicate that shamanic soul flight reflects innate psychophysiological structures. The soul journey engages a visual symbolic capacity, a nonverbal symbolic capacity for self-reference employed in dreaming (Hunt, 1995). Hunt characterizes this visionary aspect of the shaman’s ASC as based in a complex synesthesia, a blending and crossing of corporeal, visual, and auditory sensory modalities. This synthesis provides a special form of self awareness experienced as being apart from the physical body. This special perspective on self is reflected in the etymology of “ecstasy,” from the Greek ekstasis, meaning “to stand outside of oneself.”

This implication of ecstasy—standing outside of one’s self—reveals the ability of perspective taking that is derived from the capacity to take the role of the “other” towards one’s self (Hunt, 1995). It is also a capacity derived from mimesis, the ability to represent with the body. The body forms a neurological basis for human experience and knowing (Newton, 1996) and a principal aspect of metaphors used in analogic thinking (Fridreich, 1991). Body image combines memory, perception, affect, and cognition in presentational symbolism, utilizing the capacity for cross-modal translation across sensory modalities, which is at the foundation of symbolic thought (Hunt, 1995). This cognitive feature of shamanism reflects extensions of several human cognitive potentials. This presentational symbolic system based in pre-linguistic structures provided mechanisms for representation and new forms of self-awareness that produced transcendence of ordinary awareness and identity. The body image dynamics of soul flight reflects a natural symbol system, a neurognostic model that organizes both internal and

external experiences (Laughlin, 1997). Body-based representational systems provide a symbolic system for all levels of organization from metabolic levels through self-representation and advanced conceptual functions.

The shaman's visionary experiences engage the use of a presentational symbolism (Hunt, 1995). Symbolic imagery and visions of shaman's visionary experiences engage the same brain structures associated with processing perceptual information (Baars, 1997) and dreaming (Hunt, 1995). Images are a pre-verbal symbol system that has the capacity to recruit and coordinate muscle systems to achieve goals, arousing autonomic responses and engaging unconscious muscle control centers (Baars, 1997). Images engage psychobiological communication processes that mediate across different levels of information processing, integrating unconscious, non-volitional, affective, and psychophysiological information at cognitive levels. This visual information system links domains of experience, integrating somatic, psychological, and cognitive levels through visual images and analogical processes (Noll, 1985; Winkelman, 2000). These visual symbol systems provide advantages in engaging an analogic system of analysis, synthesis, and planning through visual images. The features of shamanic ASCs such as "soul flight" illustrate an adaptation involving special forms of perception and information integration. These adaptations derived from the survival benefits associated with enhanced information availability and expanded understandings of self. These ASCs reflect an adaptive response involving enhanced integration of information from unconscious operators, integrating the body-level awareness of the pre-linguistic and pre-conscious mind into consciousness. These principles of integration are the underlying basis for those universal aspects of shamanism associated with the spirit world.

The Spirit World: Psychological Projection of Self-Processes

Humans have innate mental hardware for detecting agency or animacy, which tends to be "overactive," detecting agents when they are not actually present. There are evolutionary adaptations in an "overactive"

detection system. Whether one is prey or hunter, being over-sensitive to the possibility of an active agent is adaptive for survival. Assumptions about unseen human-like actors are even more adaptive, making the mind-like characteristics of humans, as well as their psychological dispositions and emotions, the qualities that are attributed to spirits.

The inference of spirits (i.e., animism) has been postulated to derive from experiences in dreams, spontaneous out-of-body experiences, and other anomalous psychological phenomena (e.g., McClenon, 2002; Tylor, 1871). Guthrie (1993) proposed that the source of the common human tendency towards animism results from the adaptive tendency to attribute human mental, personal, and social qualities to unknown and natural phenomena. Perception requires that humans be situated in their world and environment, producing what Bird-David (1999) calls a relational epistemology. Animism is also a consequence of innate processing modules involved in self and other representation (Winkelman, 2004a). Developmental psychology, attributional theory, and consciousness studies illustrate how the projection of humans' self qualities is an inevitable consequence of their psychological and social development, making spirits a natural epistemology (Winkelman, 2004b). A wide range of adaptive functions are met by using spirits as constructs for representing aspects of humans and nature (Winkelman and Baker, 2008).

Animism is exemplified in anthropomorphism, attributing human-like characteristics to spirits and nonhuman entities, imposing order on the unknown through the projection of human models of the self that are inseparably embedded in humans' representational capacities. Animistic principles embodied in spirits are a necessary part of the processes of constituting relationships with the environment and others. Spirits are a central aspect of basic manifestation of humans' symbolic relationship to the environment, where the intentions of the unknown spirits are key aspects of the human search for meaning. This understanding of the "other" inevitably involves projection of cognitive

similarity, the inevitable use of the self as a model for understanding the unknown (Hunt, 1995); consequently, humans produce and experience an interpenetration of the qualities of the personal with the natural in the creation of the supernatural.

Shamanic cognition emphasizes the expansion of special attributes of human consciousness to new domains. Hubbard (2002) characterized these as involving the extension of meaning and intentionality to nonhuman elements of the natural world. Humans have an innate tendency to attribute the cause of an object's actions to its internal dispositional factors, assuming that unknown things operate as rational agents and have mental states, beliefs, and desires. This understanding of the unknown in terms of the dynamics of the qualities of humans is an adaptive attribution process given that humans are the most complex and dangerous agents in the environment. Attributing humans' self and social qualities is also adaptive because it reflects the normative social context that produces others' behavior, providing an interpretive framework that reflects the realities humans encounter. The assumption of spirits is a normal, natural, and inevitable consequence of humans' needs to adapt to the social context, making sense of others' behavior and appropriately attributing to them dispositions to behave in certain ways. The universality of supernatural beliefs resulted from this adaptive tendency, which then provided externalized models for personal development and social integration.

The Supernatural, Self, and Society

These projective processes underlying animism involve the use of spiritual "superpersons" in development of personhood and identity (Pandian, 1997). Spirit assumptions are reinforced by an innate capacity for social intelligence, the ability of humans to infer the mental states of other members of the species and to predict their behavior through an intuitive "theory of mind." This involves the attribution of mental states to others, modeling others' thoughts and behaviors through the use of one's own mental states and feelings. More than any other species, humans need information about the surrounding Universe and cooperation with other humans in adapting

to the local ecological niche. The need for cooperation with other humans makes essential some knowledge of their mental states (Boyer, 2001; pp.120, 122). This requires a "theory of mind" combining mental structures that detect animate agents, determines what they are looking at, inferring their intentions (goals), and ascertaining their belief systems (Boyer, 2001; p.123).

Boyer (2001) discussed how the social mind inference system is extended through spirit concepts. Actual people are limited in their access to social information about others, whereas spirits are presumed to have, or potentially have, full access to strategic information about other's motivations and actions. It is relevant to assume the existence of spirit agencies because of the importance of strategic information about other human beings. Assumptions about spirits' knowledge are an important adaptation, one that has an empirical basis in the implicit and unconscious cognitive processes that humans engage through divinatory practices (Winkelman and Peek, 2004). Supernatural agents expand human abilities at scenario building, engaging in mental thought processes without the actual circumstances. Imaging scenarios and possible consequences is an example of decoupled cognition, a mental ability also manifested in play and concepts of "trickster" spirits that violate intuitive assumptions. The ability of the mental hardware programs (inference systems) to operate decoupled from environmental input allows them to operate independent of actual experience, functioning in a counterfactual mode that explores alternative scenarios through imaginary characters that engage the process of inferring mental states of others.

Spirits are also useful strategic information concepts in personal identity and social integration. Spirits have social psychology functions as fundamental representations of the structure of human psychology, a language of intrapsychic dynamics of the self and psychosocial relations with others. Spirit beliefs also reflect the cultural dynamics of social and interpersonal relations. Spirits are used in shamanism to manipulate the dynamics of

self and personal identity, incorporating their characteristics into personal identity and powers (i.e., see Swanson, 1973). Beliefs about the particular qualities of spirits are learned, providing symbolic systems that reflect “complexes,” integrated perceptual, behavioral, and personality dynamics that operate independent of ego control. Manipulation of these complexes through ritual practices can heal by re-structuring and integrating the unconscious personality dynamics with social models, uniting unconscious and conscious functions, along with individual and society (Samuels, 1990).

Spirit Relations and Self: The Guardian Spirit Complex

Shamanic practices of soul recovery, animal allies, and guardian spirits reflect aspects of self-representation that involve “sacred others,” the intersection of the spiritual and social worlds in cultural processes that produce personal power and identity (Pandian, 1997). Shamanic relations with spirits engage humans’ capacity to “take the perspective of others,” incorporating other’s perceptions into their own self-identity. Spirit relations also engage self-development by using representations provided by the natural history module, exemplified in animal spirits and allies. Animal powers engage a specialized innate capacity for organizing knowledge about animals and recognizing “species essence.” Animal species provide a universal analogical system for creating meaning, particularly representations of self and social identification (e.g., Levi Strauss, 1962).

Animal powers as aspects of the self are exemplified in the guardian spirit complex (Swanson, 1973), whereas shamanic self-development involves incorporation of animal properties within one’s identity and personal powers. Animal relationships provide a representational system used as models for self-development and self-differentiation. Swanson characterizes these allies and guardians as empowering people in adult role development by guiding personal and social choices. Spirits’ characteristics provide ideals that structure individual psychodynamics and model social behavior in exemplifying norms for self and psychosocial relations. Spirit allies provide

alternate forms of self-representation that facilitate social and personal differentiation and provide psychosocial and cognitive mechanisms for problem-solving and mediation of personal and social conflict. Spirits provide diverse self-representations that can serve as variable command-control agents for mediating conflict between the different selves (see Winkelman, 2000 for sources and discussion). This enables the operation of the social organism with respect to a hierarchy of goals, using spirit concepts to facilitate orientation of problem-solving modules to non-routine tasks and mediate hierarchies of personal and social goals.

The use of spirits to model the self provides processes for social-psychological transformation and therapeutic change. Shamans engage spirits to provide cathartic transformations of personal and social psychodynamics. Personal spirits provide protection from stress and anxiety through models for self and the management of emotions and attachments (e.g., see Pandian on the “shamanic sacred self”). Sacred others become part of personal identity, providing internalized models that affect psychodynamics through effects upon emotions and attachments. Dramatic interactions with spirit presences provide models for self-development, incorporating the spirit “other” to produce identity modification and emotional changes. Peters (1989) and Peters and Price-Williams (1981) illustrate how shamanic spirit relations and incorporation produce transformations of the self through the acquisition of spiritual identities that change the relationships of self to the social and physical worlds. Peters & Price-Williams show how the experiential qualities of shamanic ASC enhance the potentials of role-taking in producing a transformation of the self.

Shamanism developed these associative processes, constructing and manipulating a variety of selves for psychological and social integration. Animism, totemism, and guardian spirits, as well as soul-flight and death-and-rebirth experiences, are natural symbolic systems for self-representation within which the self is internally differentiated and manipulated in relationships to others.

Totemism: Group Relations and Identity

Shamanism and other group oriented religious practices (e.g., ancestor worship) use animal species for personal and social representations, as manifested in totemism. The significance of totemism for anthropological studies of cognition are exemplified in both the classic book *Totemism* by Levi-Strauss (1962; see also Friedrich, 1991) and in work linking totemic thought to ecological relations and balance (Bird-David, 1999). Totemism involves establishing a metaphoric relationship between the natural history domains of animals and social groups, conceptualizing humans through models provided by the animal world (Levi-Strauss, 1962). Totemic thought involves analogical processes, establishing a homology between animal species and human groups, who are represented through the differences among animal species (e.g., animal clans). Totemism distinguishes human groups by attributing the characteristics derived from the animal world, representing group identity and intergroup difference through models provided by animal species. The use of animals in social and cognitive modeling is one of the most fundamental aspects of metaphoric and analogical thought (Friedrich, 1991), a universal human system for expression of meaning and creation of social and personal identity through the use of the innate module for animal species categorization.

Samuel (1990) suggested that shamanic activities provide mechanisms of altering both individual situations and group circumstances. This is achieved through ritual activities that link humans' unconscious structures of perception to create a flow and integration of information that produces a sense of relatedness. Shamanic ASCs produce dissociation from habitual automatizations and provide means of tuning the modal states of entire communities, synchronizing group and individual cognition through use of the analogical cognitive processes embodied in ritual, mimesis, and symbols. These symbolic enactments provide cultural programming of neuronal structures, an adaptive tool that Laughlin, McManus, and d'Aquili (1992) referred to as the "theater of the mind." It is

also the "theater of the social self," where rituals involve socialization processes linking individual and collective identities in ways that produce healing.

Healing and Integration of the Triune and Modular Brain

Human evolution produced a fragmentation of consciousness due to the modular structure of the brain (Mithen, 1996), the diversification of personal and social identities, and the automatization of brain processes (Laughlin et al., 1992). This produced a need for integrative brain processes, what Laughlin et al., (1992) called the holistic imperative, the drive towards expansion and integration of consciousness at higher levels. Shamanic activities produce psychological, social, and cognitive integration, managing relationships among behavioral, emotional, and cognitive processes, and between physiological and mental levels of the organism. Shamanic activities use community rituals, ASCs, spirit beliefs, metaphors, and visual symbols to produce integration of the operations of various brain systems and their functions.

One aspect of this shamanic integration involves linkages across the evolutionary strata of the brain. MacLean (1990; 1993) proposed that the brain involves three anatomically distinct yet interconnected systems-- the reptilian brain, paleomammalian brain, and neomammalian brain. These three brain system provide the basis for behavioral, emotional, and informational functions that MacLean (1993; p.39) called "protomentation," "emotiomentation," and "ratiomentation," respectively. Interactions across levels of the brain are not mediated primarily through verbal language, but through non-verbal forms of protomentation and emotiomentation that utilize social, affective, and presentational (visual symbolic) information. The interrelationships among these three functional brain systems are mediated by relationships between hormone systems and systems of meaning that we associate with life experiences. These interactions have many effects on health and illness, for instance, when fears evoke stress hormones or when religious beliefs provide relief and calm in the face of crises. The interactions among levels of the brain

mediate, evoke, and channel physiological processes, producing healing through effects on the autonomic nervous system. The relationship among the functions of different levels of the brain—innate drives and needs, emotional and social influences, and cultural representational systems—produce many kinds of health problems, e.g., chronic anxiety and fears, behavioral disorders, conflicts, excessive emotionality or desires, obsessions and compulsions, dissociations and repressions.

The Paleomammalian Brain and Emotiomentation

The paleomammalian brain's emotiomentation processes, represented in intuitions and feelings have particular significance for shamanic healing. Emotiomentation involves brain processes underlying affects and emotions that influence behavior through subjective information manifested as feelings (MacLean, 1990; p.12). The paleomammalian brain mediates many of these processes to provide mechanisms for the management of these problems and promote an integration of the self within the community. The paleomammalian brain's emotiomentation processes provide a major basis for shamanic healing, based on integrating its own subjective evaluative influences and self reference with the instinctual responses of the reptilian brain and the cognitive processes of the neomammalian brain. Paleomammalian processes are involved in self-preservation behaviors, procreation, emotions, nursing, and maternal care. Audiovocal contact and play provide foundations for personal identity. The paleomammalian brain system also synthesizes internal and external data, combining somatic reactions with interpretations of the outside world, based on personal memory, self-representation, and social context. The paleomammalian capacities for empathic caring that evolved from the long-term dependence of infants on adults, provided the basis for the development of attachment processes.

Shamanism employed these attachments in rituals to extend the feelings of emotional security to non-kin, including the spiritual and religious realms. Emotions

convey psychological information, and can provoke physiological changes when the organism is confronted with threats to survival of self or those others with whom it has interpersonal attachments. Symbolic manipulations of paleomammalian brain processes have profound effects on the organism, transforming emotiomentation into physiological effects that are fundamental to shamanic healing rituals. The paleomammalian brain mediates the biological processes that promote a sense of community and provide for cooperation to enhance human adaptation and survival. The basis of personal well being is deeply intertwined with a sense of community, a social identity where empathy with other humans provides the basis for self and security. These interactions also provide the basis for a variety of health problems derived from relations among emotions, social interaction, and sense of self. Shamanism elicits paleomammalian brain processes in rituals that provide healing practices through integrations of emotions, sense of self, attachments, and social relations (Winkelman, 1992; 2000; 2002b).

The development of the serotonergic system across phylogenetic evolution illustrates how it can have such a central role in these integrative processes. In the reptilian part of the brain, it is a regulatory system for the R-complex itself and the information emerging from the spinal cord. In the paleomammalian brain, the serotonergic system plays a central role in the regulatory inhibition of the R-complex and the upward transmission of information into the neocortex, particular through its projections into the prefrontal cortex. Together, the evolutionary levels of the serotonergic system and its numerous projections provide a central system of integration and coordination of the different brain systems.

These integrative processes are elicited by key aspects of shamanism-- ASCs, the physiological and psychological effects of community rituals, and spirit representations of person and social processes. Shamanic traditions produce an integration of consciousness through rituals that stimulate physiologically-based psychological integration, metaphoric

cognitive processes, and community bonding rituals. Shamanic therapies involve a variety of mechanisms for the transformation of the patient's health, eliciting physiological responses, social support, and enhancing symbolically-mediated placebo and other psychosomatic effects (Winkelman, 2000). A physiological basis of shamanic healing involves ASCs that produce systemic brain integration, i.e., the coordination and increased coherence of many parts of the brain. ASCs impose the paleomammalian brain's analogical processes and material of an emotional, social, and personal nature into the self-conscious processes of the frontal cortex. Physiological aspects of ASCs--parasympathetic dominance, interhemispheric synchronization, and limbic-frontal integration-- have inherent therapeutic effects, counteracting excessive activity of the sympathetic nervous system. Symbolic manipulations are the most effective processes for intervention in stress mechanisms, re-establishing balance in the autonomic nervous system by changing cognitive and emotional responses. Shamanic rituals provide assurance, counteracting emotional distress and anxiety, hence their deleterious physiological effects.

Precipitous stress-induced parasympathetic states also cause erasure of memories and previously conditioned responses, alterations in beliefs, increased suggestibility, and reversal of conditioned behavior. ASCs and ritual effects have the ability to elicit emotional memories and reduce the ego-centeredness that inhibits the experience of community connectedness and support that meets needs for belonging, comfort, and bonding with others. Shamanic healing elicits and restructures repressed memories, providing processes for expression of unconscious concerns and resolving both intrapsychic and social conflicts. Shamanic ritual management of behavior, emotions, and reason is mediated physiologically and symbolically within the paleomammalian brain where social signaling and bonding promote subjective evaluations that play a vital role in integrating instinctual responses of the ancient brains with the cognitive processes of the neomammalian brain. Shamanic rituals evolved as a system for managing the

relationships among innate drives and needs, social bonding processes, and cultural representational systems, providing a system for managing health problems derived from anxiety, fears, conflicts, excessive emotionality, obsessions, and compulsions.

Therapeutic Qualities of ASCs

A central effect of shamanic healing derives from ASC inductions. ASCs' slow wave brain discharge patterns (alpha and theta) reflect a shift in the autonomic nervous system to parasympathetic dominance, reducing stress hormone levels, and activating the serotonergic nervous system. The serotonergic system acts as a modulatory system, affecting other neurotransmitter systems and managing activities across levels of the brain through both stimulating and inhibiting processes. Central roles of serotonin are the integration of emotional and motivational processes and the synthesis of information across the functional levels of the brain. This serotonergic action is exemplified in the effects on the brain by meditation (Walton and Levitsky, 1994) and plant psychointegrators (i.e., psychedelics, hallucinogens) (Winkelman, 2001). ASCs in general integrate information from the lower levels of the brain into the processing capacity of the frontal cortex, particularly integrating information from the emotional and behavioral preverbal brain structures. This integration of preverbal information into the language mediated activities of the frontal cortex is why ASCs are often characterized as providing understanding, enlightenment, a sense of unity and oneness with the universe, feelings of connection with others, and personal integration.

The neurological mechanisms of the therapeutic effects of shamanic ASCs are suggested by research on Transcendental Meditation (TM) and other forms of meditation as well (see Winkelman, 1997; 2000 for review). Walton and Levitzky (1994) integrated a range of research studies that suggest ASCs addresses physiological dispositions associated with anxiety, stress, and depression through modifying the imbalance in serotonergic systems. They outlined a neuroendocrine model for the mechanisms of these effects. ASCs reduce stress and enhance serotonin functioning

through inducing relaxed states reflected in low levels of autonomic arousal and enhanced EEG coherence. Walton and Levitsky proposed that TM acts on the locus coeruleus, increasing serotonin availability and producing an inhibitory action paralleling the effects of sedatives and opiates. Increases in serotonin levels reduce cortisol levels, indirectly reducing stimulation of limbic anger and fear centers. The serotonin enhancing effects of TM affect the activity of the hypothalamic pituitary adrenal axis and chronic stress, reversing the serotonin depletion effects that result from the release of cortisol. TM induces increases in serotonin availability mirror Mandell's (1980) model of serotonergic mechanisms of "transcendent states," suggesting a generic role of enhanced serotonin availability in ASCs. Shamanic rituals exploit their ancient role of enhancing serotonergic production and producing special forms of awareness that integrate waking and dreaming modes of awareness.

Hypnosis as a Ritual Healing Capacity

McClenon (2002, 2006; also see Bulbulia, 2006) illustrated how an inheritable quality of suggestibility manifested in contemporary hypnosis was a central factor in humanity's evolved psychological propensity for spiritual and religious healing. Some forms of hypnosis induce the same overall general physiological changes associated with shamanic ASCs. Suggestibility contributed to ritual healing through induction of relaxation and the ability to engage attention and imagination. McClenon (2002, 2006) reviewed evidence for the presence of the suggestible capacities in other primates, illustrating that it is an ancient primate adaptation. Suggestibility in other animals provides mechanisms for reducing social stress and engaging the relaxation response (citation). Rituals among animals involve the kinds of repetitive movements that facilitate hypnotic induction in humans and produce relaxation, thereby reducing aggression. In humans, rituals' repetitive and stereotyped behaviors produce both an ASC and a sense of intragroup cohesion experienced as "union" or "oneness," classic aspects of spiritual, religious, and mystical experiences.

McClenon (2002) contended that the tendency toward suggestibility contributed to a biological capacity for recovery from disease. This capacity of suggestibility enhances symbolically induced physiological changes, i.e., psychophysiological responses that facilitate healing. Shamanic practices appear successful in treating the same kinds of conditions for which hypnosis has been shown to have significant clinical effects: somatization, mild psychiatric disorders, simple gynecological conditions, gastrointestinal and respiratory disorders, self-limiting diseases, chronic pain, neurotic and hysterical conditions, and interpersonal, psychosocial, and cultural problems (Bulbulia, 2006; McClenon, 2006).

Suggestibility provides enhanced innovation derived from access to the unconscious. Hypnosis depends on the suggestive capacity and involves focused attention, reduced peripheral awareness, and an abeyance of critical mentation that facilitates a focus upon internal imagetic representations and enhanced belief and expectation. Shamanism exploits the co-occurrence of suggestibility, dissociation, fantasy proneness, temporal lobe lability, and thin cognitive boundaries, all involving enhanced connections between unconscious and conscious mentation. Highly hypnotizable people have thin cognitive boundaries that enable greater access to the unconscious and the flow of information from the unconscious to the conscious; these another qualities associated with hypnotizability provide survival advantages, for instance by facilitating the elicitation of endogenous healing processes (Bulbulia, 2006).

Conclusions: Shamanism and the Future of Humanity

Shamanism stands at a paradoxical cross-road. On one hand it the most ancient of all human spiritual practices, while on the other it is making a rapid resurgence in modern society. Our ancient pasts and futures collide in the re-emergence of some of the most powerful of human capacities, those related to spiritual healing. Why have humans today come to re-embrace these ancient healing potentials? This essay has argued that these capacities must be understood as part of

human nature, as a variety of evolved capacities that have assisted in human adaptation and survival. While one may legitimately ask whether spiritual and religious practices still have the same adaptive capacity today as they had in the environment of evolutionary adaptations (Winkelman and Baker, 2008), the resurgence of shamanism is better understood in terms of its continued ability

to meet current human needs. The capacities utilized in shamanism tie into our ancient psychology, our unconscious, and our complex psychophysiological makeup leads to the conclusion that shamanism is not merely a vestige of our past, but a vital aspect of humanity's evolved psychological status with the possibility of continued applications in the future.

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